



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/587,656

07/28/2006

Toshimasa Kumaki

65341.00011

2833

32294

7590

12/04/2008

SQUIRE, SANDERS & DEMPSEY L.L.P.

8000 TOWERS CRESCENT DRIVE

14TH FLOOR

VIENNA, VA 22182-6212

EXAMINER

ROE, JESSEE RANDALL

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

12/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/587,656

Applicant(s)

KUMAKI ET AL.

Examiner

Jessee Roe

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 October 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
4a) Of the above claim(s) 1, 3-7, 9, 10, 12, 15 and 20-25 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 2, 8, 11, 13, 14 and 16-19 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB08)
Paper No(s)/Mail Date 28 July 2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Status of Claims

Claims 2, 8, 11, 13-14 and 16-19 are currently under examination. Because the Applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP §818.03(a)). Claims 1, 4-7 and 9-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a layered Fe-base alloy and the production thereof and claims 3, 12, 15 and 20-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a layered, concentration-varied Fe-base alloy and the production thereof, with there being no allowable generic or linking claim.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it exceeds 150 words in length.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 8 and 16-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Tahara et al. (US 5,792,282).

In regards to claim 2, Tahara et al. ('282) discloses carburizing an austenitic stainless steel, which inherently has an iron-base, comprising 1 to 6 weight percent molybdenum and 13 to 25 weight percent chromium (abstract and col. 2, lines 57-67). Tahara et al. ('282) discloses that carbon diffuses and penetrates the surface to form a deep uniform layer (col. 6, lines 23-29) wherein chromium carbide can hardly be identified and more of the chromium is present in the steel than in the case (col. 8, lines 1-22). The Examiner notes that the structure disclosed by Tahara et al. ('282) is the

same as that of the instant invention. Therefore, an increase in hardness from the surface to an inside portion thereof is expected. MPEP 2112.01 I.

In regards to claim 8, Tahara et al. ('282) discloses that the presence of carbon is higher in the surface portion than that of the inside portion (col. 3, lines 30-44 and col. 6, lines 23-29).

In regards to claims 16-19, Tahara et al. ('282) discloses the formation of Cr_{23}C_6 (col. 8, lines 1-23) and the addition of molybdenum for the stabilization of ferrite (iron in solid solution) (col. 3, lines 44-52). Therefore, the presence of $(\text{Fe}, \text{Cr})_{23}\text{C}_6$ is expected.

Claims 2, 8, 11, 13-14 and 16-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Garg et al. (US 5,777,247).

In regards to claim 11, Garg et al. ('247) discloses mixing copper powder, graphite powder, and iron based powder (col. 3, lines 48-62) wherein the iron-based powder is a powder alloy that is low in carbon containing 0.13 weight percent oxygen, 0.18 weight percent manganese, 0.12 weight percent copper, 0.05 weight percent nickel, and 0.07 weight percent chromium (col. 5, lines 5-28). Garg et al. ('247) further discloses sintering (heat treatment) the powders (col. 5, lines 25-39).

Still regarding claim 11, although Garg et al. ('247) does not specify "that said first element is diffused to said surface layer portion, and said first element reacts with carbon existing in said surface layer portion of said Fe-based alloy to form said carbide", this is expected because Garg et al. ('247) discloses the same composition and the

same processing steps. Therefore, a first element diffused to the surface layer portion and reacted with carbon to form carbide is expected. MPEP 2112.01 I.

In regards to claim 13, Garg et al. ('247) discloses chromium, nickel and manganese (col. 5, lines 5-28).

In regards to claim 14, Garg et al. ('247) discloses carbon and copper (col. 3, lines 55-62 and col. 5, lines 5-28).

In regards to claims 2 and 8, Garg et al. ('247) discloses a protective layer of copper (on a surface) (col. 4, lines 50-67). Additionally, Garg et al. ('247) discloses that the iron powder contains copper (col. 5, lines 19-23). Thus, a higher concentration of copper is present at the surface than inside the alloy.

With respect to the recitation "said diffusion layer contains a carbide formed by carbonizing a first element which has a property to increase the hardness of an Fe-based alloy" as in lines 4-5 of claim 2 and "an amount of said first element increases from said surface layer portion toward said inside portion" as in lines 9-10 of claim 2, Garg et al. ('247) discloses the same composition in addition to the same processing. Therefore, this structure would be expected. MPEP 2112.01 I.

In regards to claims 16-19, Garg et al. ('247) discloses 0.18 weight percent manganese, 0.12 weight percent copper, 0.05 weight percent nickel, and 0.07 weight percent chromium (col. 5, lines 5-28) in addition to sintering (heat treatment) with graphite (carbon source). Therefore the formation of chromium carbide, nickel carbide, and/or manganese carbide in the form of M_6C or $M_{23}C$ and $(Fe, M)_6C$ or $(Fe, M)_{23}C$

are expected because Garg et al. ('247) discloses the same composition in addition to the same processing. MPEP 2112.01 I.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jessee Roe whose telephone number is (571) 272-5938. The examiner can normally be reached on Monday-Friday 7:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John P. Sheehan/
Primary Examiner, Art Unit 1793